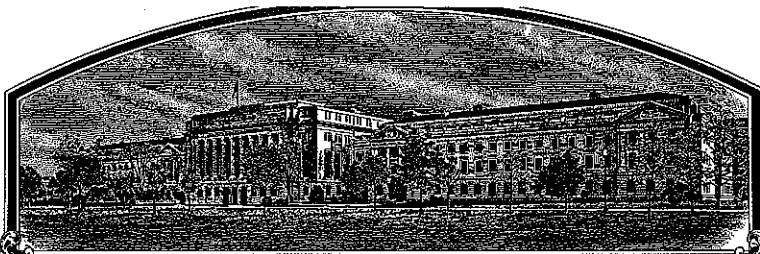


No.

200700424



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Syngenta Seeds, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

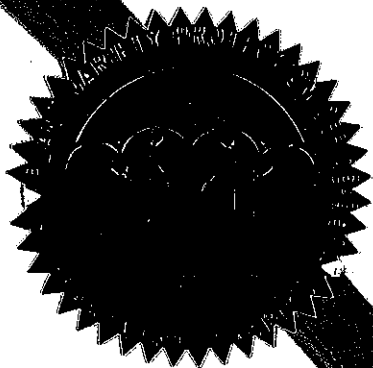
NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC SUPPLEMENTATION OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR PROPAGATING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED IN THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

BEAN, GARDEN

'Duke'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this fifth day of February, in the year two thousand and eight.

Attest:



[Signature]

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

[Signature]

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

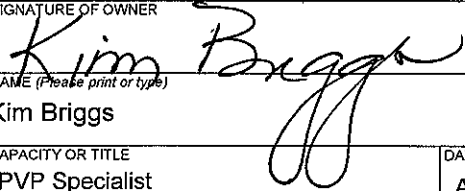
Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER Syngenta Seeds, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME		3. VARIETY NAME Duke	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 600 North Armstrong Place Boise, ID 83704		5. TELEPHONE (include area code) 208-465-8522		<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;">FOR OFFICIAL USE ONLY</p> <p style="margin: 0;">PVPO NUMBER</p> <p style="font-size: 24px; margin: 0;">#200700424</p> <p style="margin: 0;">FILING DATE</p> <p style="font-size: 24px; margin: 0;">AUGUST 30, 2007</p> </div>	
		6. FAX (include area code) 208-467-4559			
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Corporation		8. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware		9. DATE OF INCORPORATION 02/25/1975	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers)				<div style="border: 1px solid black; padding: 5px;"> <p style="margin: 0;">FILING AND EXAMINATION FEES:</p> <p style="margin: 0;">\$ 4,382.00</p> <p style="margin: 0;">DATE 8/30/07</p> <p style="margin: 0;">CERTIFICATION FEE:</p> <p style="margin: 0;">\$ 768.00</p> <p style="margin: 0;">DATE 12/12/07</p> </div>	
Kim Briggs 40 Syngenta Seeds, Inc. 6338 Highway 20-26 Nampa, ID 83687					
11. TELEPHONE (Include area code) 208-465-8522		12. FAX (Include area code) 208-467-4559		13. E-MAIL kim.briggs@syngenta.com	
14. CROP KIND (Common Name) Garden Bean		16. FAMILY NAME (Botanical) Fabaceae		18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.	
15. GENUS AND SPECIES NAME OF CROP Phaseolus vulgaris L.		17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input checked="" type="checkbox"/> NO (If "no", go to item 23)	
19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)		21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED			
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety		22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)			
b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness					
c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety					
d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional)					
e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership					
f. <input checked="" type="checkbox"/> Exhibit F. Declaration Regarding Deposit					
g. <input checked="" type="checkbox"/> Voucher Sample (3,000 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)					
h. <input checked="" type="checkbox"/> Filing and Examination Fee (\$4,382), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)					
23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)			

25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER 		SIGNATURE OF OWNER	
NAME (Please print or type) Kim Briggs		NAME (Please print or type)	
CAPACITY OR TITLE PVP Specialist	DATE August 28, 2007	CAPACITY OR TITLE	DATE

(See reverse for instructions and information collection burden statement)

GENERAL INSTRUCTIONS: To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E, F; (3) for a tuber reproduced variety, verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; and (4) payment by credit card or check drawn on a U.S. bank for \$4,382 (\$518 filing fee and \$3,864 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice). **NEW:** With the application for a seed reproduced variety **or by direct deposit soon after filing**, the applicant must provide at least 3,000 viable untreated seeds of the variety *per se*, and for a hybrid variety at least 3,000 untreated seeds of each line necessary to **reproduce** the variety. Partial applications will be held in the PVPO for not more than 90 days; then returned to the applicant as un-filed. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a payment by credit card or check payable to "Treasurer of the United States" in the amount of \$768 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

Plant Variety Protection Office
Telephone: (301) 504-5518 **FAX:** (301) 504-5291
General E-mail: PVPOmail@usda.gov
Homepage: <http://www.ams.usda.gov/science/pvpo/PVPindex.htm>

SPECIFIC INSTRUCTIONS:

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and **provide evidence** that the permanent name of the application variety (even if it is a parental, inbred line) has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: U.S. Department of Agriculture, Agricultural Marketing Service, Livestock and Seed Programs, **Seed Regulatory and Testing Branch**, 801 Summit Crossing Place, Suite C, Gastonia, North Carolina 28054-2193 Telephone: (704) 810-8870. <http://www.ams.usda.gov/lsg/seed.htm>.

ITEM

- 19a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
 (2) the details of subsequent stages of selection and multiplication;
 (3) evidence of uniformity and stability; and
 (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
 - (2) attach replicated statistical data for characters expressed numerically and demonstrate that these are clear differences; and
 - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

22. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

23. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

Sold domestically on October 20, 2006 to Clifton Seed Company.

24. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Exhibit A
Origin and Breeding History
'Duke'

Garden bean cultivar 'Duke' originated from a hand-pollinated cross between Syngenta Seeds, Inc. breeding lines 982GC06-P-7-2-4 and Nash. Valliant, HB1168-7-3-1-5-2, HB692-2-6, HB958-1-2, H737-3-3-3-2, HB491-3-1, HB357-6-6-3, H550-2-1-1, H574-1, Benton, H978-5-2, Champ, H379-2-8-1, H747-6-5, H63-2-6, H550-2-1, H27-12, Gallatin 50 are Syngenta Seeds, Inc. breeding and commercial lines. OSU 4883, OSU 4117-2, and OSU 1604M are breeding lines developed by Oregon State University. Labrador, Spurt, Eagle, and Harvester are commercial varieties developed by Seminis Inc. Tendercrop is a variety developed by USDA.

The pedigree method of selection was applied in generations F2 through F5 for the traits of yield, heat tolerance, pod length of 5.5 inches or greater, and stable pod color. The F6 generation was bulk harvested to supply a seed source for further increases. Duke has been uniform and genetically stable for five generations of increases from the original F7, being free of off-types and variants

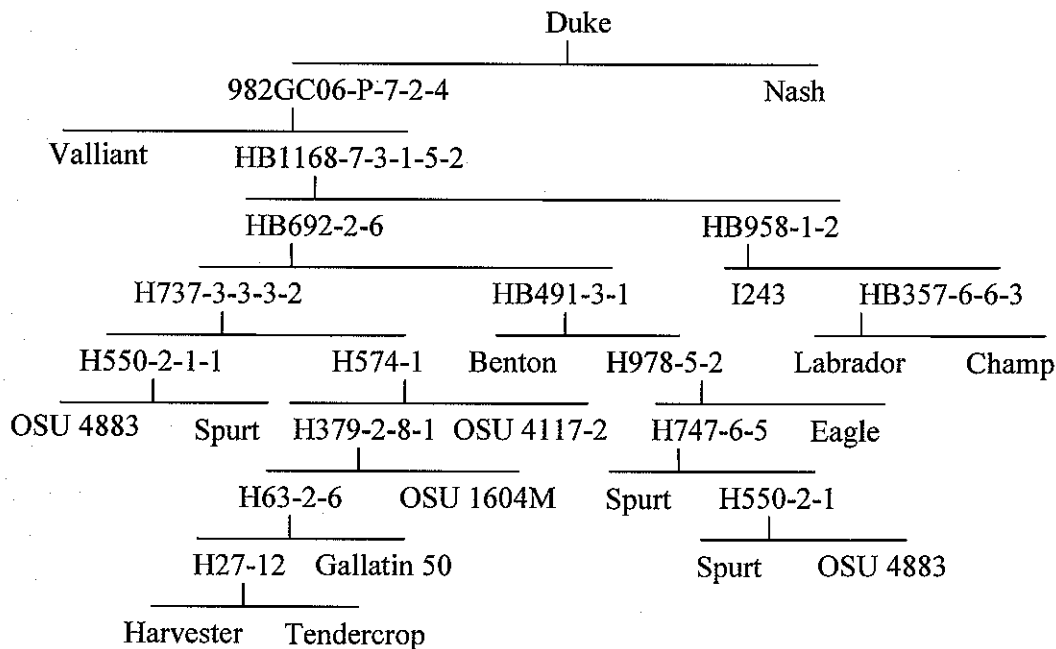


Exhibit B
Statement of Distinctness
'Duke'

Garden bean cultivar Duke is a bush snap bean suitable for fresh and processing markets and most closely resembles the variety Opus. Garden bean cultivar Duke and Opus are significantly different in plant spread and three and four-sieve pod length when grown in two Minnesota locations in year 2007.

Opus has a larger plant spread than Duke by approximately 4 cm in both locations. Duke plant spread measured an average of 35.5 and 36.7 cm and Opus average measurement was 37.7 and 40.7 cm at Stanton and Rosemont locations, respectively.

In Stanton and Rosemont, MN the cultivar Duke has a greater three-sieve and four-sieve pod length average measurement than the cultivar Opus. In Stanton the three-sieve pod length average for Duke was 15.4 cm whereas Opus average pod length was 13.9 cm. The average four-sieve pod length in Stanton was 15.3 cm for cultivar Duke and 14.4 cm for cultivar Opus. In Rosemont the average three-sieve and four-sieve pod length for both cultivars were very similar to the average measurements in Stanton. The cultivar Duke had a three-sieve pod length average of 14.7 cm and for the cultivar Opus the three-sieve pod length average was 13.42 cm. The four-sieve pod average length was 15 and 14.27 cm for Duke and Opus, respectively.

The values for plant spread and three and four-sieve pod length are based on average measurements made in two Minnesota locations in 2007. Twenty plants of each cultivar were measured for plant spread. Data was collected on pods harvested from 100 plant plots of each cultivar. Twenty random samples from the three and four-sieve pod sub-sample were measured for pod length.

Explanation of statistical analysis variables used in the following attachments.

DSPDMN1 = Duke Plant Spread (cm), Minnesota, Stanton
 OSPDMN1 = Opus Plant Spread (cm), Minnesota, Stanton
 D3SPDLMN1 = Duke Three-Sieve Pod Length (cm), Minnesota, Stanton
 O3SPDLMN1 = Opus Three-Sieve Pod Length (cm), Minnesota, Stanton
 D4SPDLMN1 = Duke Four-Sieve Pod Length (cm), Minnesota, Stanton
 O4SPDLMN1 = Opus Four-Sieve Pod Length (cm), Minnesota, Stanton

DSPDMN2 = Duke Plant Spread (cm), Minnesota, Rosemont
 OSPDMN2 = Opus Plant Spread (cm), Minnesota, Rosemont
 D3SPDLMN2 = Duke Three-Sieve Pod Length (cm), Minnesota, Rosemont
 O3SPDLMN2 = Opus Three-Sieve Pod Length (cm), Minnesota, Rosemont
 D4SPDLMN2 = Duke Four-Sieve Pod Length (cm), Minnesota, Rosemont
 O4SPDLMN2 = Opus Four-Sieve Pod Length (cm), Minnesota, Rosemont

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Descriptive Statistics using Statistix 8.0

Variable	N	Mean	SD	Minimum	Maximum
DSPDMN1	20	35.52	5.19	27.0	46.0
OSPDMN1	20	39.70	6.75	31.0	56.0
D3SPDLMN1	20	15.43	1.00	13.9	17.2
O3SPDLMN1	20	13.96	0.88	11.8	15.8
D4SPDLMN1	20	15.38	1.26	13.4	18.2
O4SPDLMN1	20	14.42	1.14	11.3	16.0

One-Way AOV and LSD Test for: DSPDMN1 OSPDMN1 using Statistix 8.0

Source	DF	SS	MS	F	P
Between	1	174.31	174.306	4.80	0.0347
Within	38	1380.94	36.340		
Total	39	1555.24			

Grand Mean 37.613 CV 16.03

	Chi-Sq	DF	P
Bartlett's Test of Equal Variances	1.27	1	0.2599
Cochran's Q	0.6287		
Largest Var / Smallest Var	1.6933		

Component of variance for between groups 6.89829
 Effective cell size 20.0

Variable	Mean
DSPDMN1	35.525
OSPDMN1	39.700
Observations per Mean	20
Standard Error of a Mean	1.3480
Std Error (Diff of 2 Means)	1.9063

LSD All-Pairwise Comparisons Test

Variable	Mean	Homogeneous Groups
OSPDMN1	39.700	A
DSPDMN1	35.525	B

Alpha 0.05 Standard Error for Comparison 1.9063
 Critical T Value 2.024 Critical Value for Comparison 3.8591
 All 2 means are significantly different from one another.

Duke Exhibit B

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One-Way AOV and LSD Test for: D3SPDLMN1 O3SPDLMN1 using Statistix 8.0

Source	DF	SS	MS	F	P
Between	1	21.60	21.60	24.1	0.0000
Within	38	34.07	0.89		
Total	39	55.68			

Grand Mean 14.700 CV 6.44

	Chi-Sq	DF	P
Bartlett's Test of Equal Variances	0.28	1	0.5997
Cochran's Q	0.56		
Largest Var / Smallest Var	1.27		

Component of variance for between groups 1.03562
 Effective cell size 20.0

Variable	Mean
D3SPDLMN1	15.43
O3SPDLMN1	13.96
Observations per Mean	20
Standard Error of a Mean	0.2117
Std Error (Diff of 2 Means)	0.2994

LSD All-Pairwise Comparisons Test

Variable	Mean	Homogeneous Groups
D3SPDLMN1	15.435	A
O3SPDLMN1	13.965	B

Alpha 0.05 Standard Error for Comparison 0.2994
 Critical T Value 2.024 Critical Value for Comparison 0.6062
 All 2 means are significantly different from one another.

One-Way AOV and LSD Test for: D4SPDLMN1 O4SPDLMN1 using Statistix 8.0

Source	DF	SS	MS	F	P
Between	1	9.31	9.31	6.37	0.0159
Within	38	55.57	1.46		
Total	39	64.88			

Grand Mean 14.903 CV 8.12

	Chi-Sq	DF	P
Bartlett's Test of Equal Variances	0.18	1	0.6756
Cochran's Q	0.5485		
Largest Var / Smallest Var	1.2149		

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Component of variance for between groups 0.39248
Effective cell size 20.0

Variable Mean
D4SPDLMN1 15.385
O4SPDLMN1 14.420
Observations per Mean 20
Standard Error of a Mean 0.2704
Std Error (Diff of 2 Means) 0.3824

LSD All-Pairwise Comparisons Test

Variable Mean Homogeneous Groups
D4SPDLMN1 15.385 A
O4SPDLMN1 14.420 B

Alpha 0.05 Standard Error for Comparison 0.3824
Critical T Value 2.024 Critical Value for Comparison 0.7742
All 2 means are significantly different from one another.

Descriptive Statistics using Statistix 8.0

Variable	N	Mean	SD	Minimum	Maximum
DSPDMN2	20	36.72	6.46	28.0	49.0
OSPDMN2	20	40.72	4.37	32.0	48.0
D3SPDLMN2	20	14.75	0.82	13.5	16.3
O3SPDLMN2	20	13.42	0.81	11.7	14.8
D4SPDLMN2	20	15.05	1.15	12.5	18.2
O4SPDLMN2	20	14.27	1.08	12.5	15.9

One-Way AOV and LSD Test for: DSPDMN2 OSPDMN2 using Statistix 8.0

Source	DF	SS	MS	F	P
Between	1	160.00	160.000	5.26	0.0275
Within	38	1156.47	30.434		
Total	39	1316.47			

Grand Mean 38.725 CV 14.25

	Chi-Sq	DF	P
Bartlett's Test of Equal Variances	2.75	1	0.0970
Cochran's Q	0.6859		
Largest Var / Smallest Var	2.1838		

Component of variance for between groups 6.47832
Effective cell size 20.0

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200700424

Variable	Mean
DSPDMN2	36.725
OSPDMN2	40.725
Observations per Mean	20
Standard Error of a Mean	1.2336
Std Error (Diff of 2 Means)	1.7445

LSD All-Pairwise Comparisons Test

Variable	Mean	Homogeneous Groups
OSPDMN2	40.725	A
DSPDMN2	36.725	B

Alpha	0.05	Standard Error for Comparison	1.7445
Critical T Value	2.024	Critical Value for Comparison	3.5316

All 2 means are significantly different from one another.

One-Way AOV and LSD Test for: D3SPDLMN2 O3SPDLMN2 using Statistix 8.0

Source	DF	SS	MS	F	P
Between	1	17.6890	17.6890	26.4	0.0000
Within	38	25.4620	0.6701		
Total	39	43.1510			

Grand Mean 14.085 CV 5.81

	Chi-Sq	DF	P
Bartlett's Test of Equal Variances	0.00	1	0.9787
Cochran's Q	0.5031		
Largest Var / Smallest Var	1.0125		

Component of variance for between groups	0.85095
Effective cell size	20.0

Variable	Mean
D3SPDLMN2	14.750
O3SPDLMN2	13.420
Observations per Mean	20
Standard Error of a Mean	0.1830
Std Error (Diff of 2 Means)	0.2589

Duke Exhibit B 8

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LSD All-Pairwise Comparisons Test

Variable	Mean	Homogeneous Groups
D3SPDLMN2	14.750	A
O3SPDLMN2	13.420	B

Alpha 0.05 Standard Error for Comparison 0.2589
 Critical T Value 2.024 Critical Value for Comparison 0.5240
 All 2 means are significantly different from one another.

One-Way AOV and LSD Test for: D4SPDLMN2 O4SPDLMN2 using Statistix 8.0

Source	DF	SS	MS	F	P
Between	1	6.0840	6.08400	4.84	0.0340
Within	38	47.7720	1.25716		
Total	39	53.8560			

Grand Mean 14.660 CV 7.65

	Chi-Sq	DF	P
Bartlett's Test of Equal Variances	0.06	1	0.8058
Cochran's Q	0.5286		
Largest Var / Smallest Var	1.1211		

Component of variance for between groups 0.24134
 Effective cell size 20.0

Variable	Mean
D4SPDLMN2	15.050
O4SPDLMN2	14.270
Observations per Mean	20
Standard Error of a Mean	0.2507
Std Error (Diff of 2 Means)	0.3546

LSD All-Pairwise Comparisons Test

Variable	Mean	Homogeneous Groups
D4SPDLMN2	15.050	A
O4SPDLMN2	14.270	B

Alpha 0.05 Standard Error for Comparison 0.3546
 Critical T Value 2.024 Critical Value for Comparison 0.7178
 All 2 means are significantly different from one another.

Duke Exhibit B

9

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 3 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

Exhibit C

OBJECTIVE DESCRIPTION OF VARIETY
Garden Bean (*Phaseolus vulgaris* L.)

NAME OF APPLICANT (S) <i>Syngenta Seeds, Inc.</i>	TEMPORARY OR EXPERIMENTAL DESIGNATION	VARIETY NAME <i>Duke</i>
ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country) <i>600 North Armstrong Place Boise, ID 83704</i>		FOR OFFICIAL USE ONLY PVPO NUMBER <i>#200700424</i>

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g., 0 9 9 or 0 9) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties centered in the same trial. Measured data should be for SPACED PLANTS. Ranges should also be given. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: _____
Please answer all questions for your variety; lack of response may delay progress of your application.

1. TYPE:

☒ 1 = Garden 2 = Flageolet 3 = Romano

2. MARKET MATURITY:

☒ 58 Days to Edible Pods

☒ N/A Heat Units to Edible Pods

☒ 07 Number of Days Earlier Than

Same As

☒ 05 Number of Days Later Than

☒ 2
☒ 1
☐

Comparison Variety

Comparison Varieties

1 = Tender crop 2 = Kentucky Wonder
3 = Gold rush 4 = Slenderette
5 = Gitana 6 = Provider
7 = Bush Blue Lake 290
8 = Other (Specify Below) *Bronco*

3. PLANT:

☒ 06 cm Spacing Between Plants in a Row

☒ 1 Habit 1 = Determinate
2 = Indeterminate, Erect Stem and Branches
3 = Indeterminate with Weak and Prostrate Stem and Branches
4 = Indeterminate Climbing Habit with Weak, Long, and Twisted Stem and Branches

☒ 038 cm Height

☒ 02 cm Shorter Than

Same Height As

☒ 05 cm Taller Than

☒ 8
☒ 1
☒ 5

Comparison Variety

Use Comparison Varieties from Section 2

3. PLANT: (continued)

36

cm Spread

03

cm Narrower Than

8

Same Width As

5

cm Wider Than

Comparison Variety

Use Comparison Varieties from Section 2**3**

Pod Position: 1 = Low 2 = High 3 = Scattered

2

Bush Form (Illustrated Below)



1 = Spherical Bush Form



2 = Stem Bush Form



3 = Wide Bush Form



4 = High Bush Form

5 = Other (Specify) _____

4. LEAVES:

2

Surface: 1 = Dull 2 = Glossy 3 = Indeterminate

2

Size: 1 = Small (Gitana) 2 = Medium 3 = Large (Tender Crop)

2Color: 1 = Light Green (as Light or Lighter than Gold Rush)
2 = Medium Green
3 = Dark Green (as Dark or Darker than Bush Blue Lake 290)

5. ANTHOCYANIN PIGMENT:

(1 = Absent

2 = Present)

1

Flowers

1

Stems

1

Pods

1

Seeds

1

Leaves

1

Petioles

1

Peduncles

1

Nodes

6. FLOWER COLOR AND DAYS TO BLOOM:

1

Color of Standard

1

Color of Wings

1

Color of Keel

37

Days to 50% Bloom

Flower Color Choices

1 = White 2 = Cream

3 = Pink 4 = Lilac

5 = Purple 6 = Blue

7 = Other (Specify) _____

7. PODS (Edible Maturity):

2Exterior Color:
(Fresh)

1 = Light Green (as Light or Lighter than Provider)

2 = Medium Green

3 = Dark Green (as Dark or Darker than Bush Blue Lake 290)

4 = Yellow (Gold Rush)

5 = Green-red Variegated (Horticultural)

6 = Other (Specify) _____

1

Processed Pods (Exterior Color):

1 = Light (Tender Crop)

2 = Dark (Bush Blue Lake 290)

1

Dry Pod Color:

1 = Buckskin (Sprite)

2 = Green, Persistent Chlorophyll (Hystyle)

7. PODS (continued):

2Cross Section Pod Shape:
(Middle of the Pod)

1 = Flat

2 = Heart (Pear)

3 = Round

4 = Figure Eight

**2**

Crease Back:

1 = Present

2 = Absent

2

Pubescence:

1 = None (Slenderette)

2 = Sparse

3 = Considerable (Provider or Sprite)

1

Constriction (Interocular Cavitation):

1 = None

2 = Slight

3 = Deep

09

mm Spur Length

2

Fiber:

1 = None (Bush Blue Lake 290)

2 = Sparse

3 = Considerable (Sprite)

6

Number of Seeds per Pod

2

Suture String:

1 = Present

2 = Absent

1

Seed Development: 1 = Slow (Bush Blue Lake 290)

2 = Medium

3 = Fast (Provider)

1

Machine Harvest: 1 = Adapted

2 = Not Adapted

Percent sieve size distribution at optimum maturity for not-flat pods

4.76 to 5.76mm	5.76 to 7.34mm	7.34 to 8.34mm	8.34 to 9.53mm	9.53 to 10.72 mm	>10.72mm
6 %	10 %	36 %	46 %	2 %	0 %
3 Sieve	15 cm Length	07 mm width	08 Total mm Thickness		
4 Sieve	15 cm Length	08 mm width	09 Total mm Thickness		
5 Sieve	15 cm Length	09 mm width	10 Total mm Thickness		
6 Sieve	15 cm Length	09 mm width	10 Total mm Thickness		

8. SEED COLOR:

3

Seed Coat Luster: 1 = Shiny 2 = Dull 3 = Semi-Shiny 4 = Variable

1

Seed Coat: 1 = Monochrome 2 = Polychrome

11

Primary Color:

1 = White

2 = Yellow

3 = Buff

4 = Tan

5 = Brown

6 = Pink

7 = Red

8 = Purple

9 = Blue

10 = Black

11 = Other

pale green**11**

Secondary Color: 1 = White

2 = Yellow

3 = Buff

4 = Tan

5 = Brown

6 = Pink

7 = Red

8 = Purple

9 = Blue

10 = Black

11 = Other

1

Seed Coat Pattern: 1 = Solid

1 = Splashed

3 = Mottled

4 = Striped

5 = Flecked

6 = Dotted

2

Hilar Ring:

1 = Absent

2 = Present

02

Hilar Ring Color: 1 = White

2 = Yellow

3 = Buff

4 = Tan

5 = Brown

6 = Pink

7 = Red

8 = Purple

9 = Blue

10 = Black

11 = Other

9. SEED SHAPE AND SIZE:

1

Hilum View:



1 = Elliptical



2 = Oval



3 = Round

2

Cross Section:

1 = Elliptical

2 = Oval

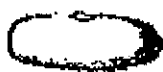
3 = Cordate

4 = Round

9. SEED SHAPE AND SIZE: (continued)

3

Side View:



1 = Oval to Oblong

2 = Round

3 = Reniform

23

gm/100 Seeds

03

gm/100 Seeds Lighter Than

1

gm/100 Seeds Same As

7

Comparison Variety

05

gm/100 Seeds Heavier Than

4

10. DISEASE RESISTANCE: 0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant

0

Anthracnose (*Colletotrichum lindemuthianum*)☐

Race Alpha

☐

Race Beta

☐

Race Gamma

☐

Race Delta

☐

Race Epsilon

☐

Race Lambda

☐

Race Kappa

☐

Specify Race _____

0

Bean Rust (*Uromyces appendiculatus*)☐

Race 38

☐

Race 39

☐

Race 40

☐

Race 44

☐

Race 45

☐

Race 46

☐

Race 49

☐

Race 50

☐

Race 51

☐

Race 52

☐

Race 54

☐

Race 56

☐

Race 59

☐

Specify Race _____

0

Powdery Mildew (*Erysiphe polygoni*)

0

Fusarium Root Rot (*Fusarium solani* f. sp. *phaseoli*)

0

Pythium Root Rot (*Pythium* spp.)

0

Aphanomyces Root Rot (*Aphanomyces euteiches*)

0

Rhizoctonia Root Rot (*Rhizoctonia solani*)

0

Pythium Blight or Aerial Pythium (*Pythium ultimum*)

0

Angular Leaf Spot (*Isariopsis griseola*)

0

Bacterial Wilt (*Corynebacterium flaccumfaciens* subsp. *flaccumfaciens*)

1

Bacterial Brown Spot (*Pseudomonas syringae* pv. *syringae*)

0

Common Bacterial Blight (*Xanthomonas campestris* pv. *phaseoli*)

0

Halo Blight (*Pseudomonas syringae* pv. *phaseolicola*)☐

Race 1

☐

Race 2

0

Clover Yellow Vein Virus (CYVV)

0

Bean Common Mosaic Virus (BCMV)

☐

BV1

☐

NY15

☐

NL2

☐

NL3

☐

NL4

☐

NL8

☐

Florida

☐

Idaho

☐

Mexican

☐

Western

☐

Type

☒

Other (Specify)

Dominate 1 Gene Resistance

0

Yellow Bean Mosaic Virus (BYMV)

3

Curly Top Virus (BCTV)

0

Other (Specify Disease and Race or Strain)

11. INSECT RESISTANCE: 0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant

<input type="checkbox"/> 0	Aphid	<input type="checkbox"/> 0	Root Knot Nematode
<input type="checkbox"/> 0	Leafhopper	<input type="checkbox"/> 0	Seed Corn Maggot
<input type="checkbox"/> 0	Lygus	<input type="checkbox"/> 0	Thrips
<input type="checkbox"/> 0	Pod Borer	<input type="checkbox"/> 0	Weevils
<input type="checkbox"/>	Other (Specify) _____		

12. PHYSIOLOGICAL RESISTANCE: 0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant

<input type="checkbox"/> 0	Heat	<input type="checkbox"/> 0	Cold	<input type="checkbox"/> 0	Drought
<input type="checkbox"/> 0	Air Pollution	<input type="checkbox"/> 0	Ozone		
<input type="checkbox"/>	Other (Specify) _____				

13. COMMENTS:

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

1. NAME OF APPLICANT(S) Syngenta Seeds, Inc.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME Duke
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 600 North Armstrong Place Boise, ID 83704	5. TELEPHONE (Include area code) (208) 465-8522	6. FAX (Include area code) (208) 467-4559
7. PVPO NUMBER #200700424		

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain. ☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country. ☒ YES ☐ NO

10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☒ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

Garden Bean 'Duke' was bred and developed by plant breeders employed by Syngenta Seeds, Inc. By agreement between the employee and Syngenta Seeds, Inc., all rights to any invention, discovery or development made by the employee while employed by Syngenta Seeds, Inc. were assigned to Syngenta Seeds, Inc. with no rights retained by the employee.

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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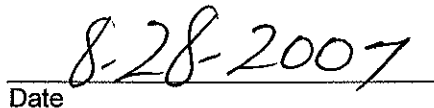
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AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705**

**EXHIBIT F
DECLARATION REGARDING DEPOSIT**

NAME OF OWNER (S) Syngenta Seeds, Inc.	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 600 North Armstrong Place Boise, ID 83704	TEMPORARY OR EXPERIMENTAL DESIGNATION VARIETY NAME Duke
NAME OF OWNER REPRESENTATIVE (S) Kim Briggs	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country) 6338 Highway 20-26 Nampa, ID 83687	FOR OFFICIAL USE ONLY PVPO NUMBER #200700424

I do hereby declare that during the life of the certificate a viable sample of propagating material of the subject variety will be deposited, and replenished as needed periodically, in a public repository in the United States in accordance with the regulations established by the Plant Variety Protection Office.


 Signature


 Date